

CLAIMS

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1. Display apparatus comprising:
a display; (740)
an orientation sensitive interface mechanism operable in first and second-modes
corresponding to respective first and second orientations of said display;
selection means for selecting operation of said orientation sensitive interface
mechanism in said first or second mode; and
orientation sensing means (950) for determining an orientation of said display and
operable to automatically activate said selection means in accordance with said orientation,
said orientation sensing means comprising a display mode sensor responsive to a display
mode control signal indicative of a display mode for an image for display by said display
apparatus to automatically activate said selection means in accordance with a sensed
display mode. (820) (807, 2-20)
 2. Display apparatus according to claim 1, said orientation sensing means (950)
operable to determine said orientation relative to the surface of the earth.
 3. Display apparatus according to claim 1, said display comprising a dimension
corresponding to a first direction greater than a dimension corresponding to a second
direction, said first and second directions being transverse to each other. (808-80)
 4. Display apparatus according to claim 3, said selection means operable to
select a landscape or portrait display mode for said display. 7, 16-17
 5. Display apparatus according to claim 1, said selection means being user
operable. 8, 66-7, 1
 6. Display apparatus according to claim 5, said selection means being manually
operable. 8, 66-7, 1

7. Display apparatus comprising:

a display;

an orientation sensitive interface mechanism operable in first and second modes corresponding to respective first and second orientations of said display;

selection means for selecting operation of said orientation sensitive interface mechanism in said first or second mode; and

orientation sensing means for determining an orientation of said display and operable to automatically activate said selection means in accordance with said orientation, said orientation sensing means comprising a display mode sensor responsive to a display mode control signal indicative of a display mode for an image for display by said display apparatus to automatically activate said selection means in accordance with a sensed display mode;

said orientation sensitive interface mechanism including:

a first loudspeaker pair comprising a first and second loudspeaker disposed along a first axis corresponding to said first orientation; and

a third loudspeaker, said second and third loudspeaker forming a second loudspeaker pair disposed along a second axis corresponding to said second orientation;

said selection means operable to select said first or second loudspeaker pair for operation in said first or second mode, respectively.

8. Display apparatus according to claim 7, wherein said loudspeakers for respective first and second loudspeaker pairs are disposed relative to each other for providing a substantially stereophonic sound image.

9. Display apparatus according to claim 7, further comprising audio circuitry selectable to adapt a signal input thereto to provide a substantially stereophonic image from said first or second loudspeaker pair.

10. Display apparatus according to claim 9, said audio circuitry configured to receive right and left channel stereophonic signals.

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11. Display apparatus according to claim 10, said audio circuitry operable to provide stereo extension means to widen the stereophonic image produced by said first or second loudspeaker pair.

12. Display apparatus according to claim 11, wherein said stereo extension means is operable to introduce a phase delay between said right and left channel stereophonic signals.

13. Display apparatus according to claim 10, said audio circuitry operable to provide stereo extension circuitry to widen the stereophonic image produced by said first or second loudspeaker pair.

14. Display apparatus according to claim 11, wherein said stereo extension circuitry is operable to introduce a phase delay between said right and left channel stereophonic signals.

15. Display apparatus according to claim 12, wherein said right and left channel stereophonic signals are coupled together via circuitry for providing said phase delay.

16. Display apparatus according to claim 14, wherein said right and left channel stereophonic signals are coupled together via circuitry for providing said phase delay.

17. Display apparatus according to claim 11, wherein said circuitry is selectable to introduce said stereo extension means phase delay for one of said first or second loudspeaker pair.

18. Display apparatus according to claim 7, each of said first, second and third loudspeakers comprising more than one drive unit.

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19. Display apparatus comprising:

a display;

an orientation sensitive interface mechanism operable in first and second modes corresponding to respective first and second orientations of said display;

selection means for selecting operation of said orientation sensitive interface mechanism in said first or second mode; and

orientation sensing means for determining an orientation of said display and operable to automatically activate said selection means in accordance with said orientation, said orientation sensing means comprising a display mode sensor responsive to a display mode control signal indicative of a display mode for an image for display by said display apparatus to automatically activate said selection means in accordance with a sensed display mode; said display apparatus further comprising:

a touch sensitive display; and

said orientation sensitive interface mechanism including a display driver operable in said first mode to display a graphic symbol disposed corresponding to said first orientation and in said second mode to display said graphic symbol disposed corresponding to said second orientation.

20. Display apparatus according to claim 19, said display driver operable in said first mode to display an image of a keyboard on said touch sensitive display disposed corresponding to said first orientation and operable in said second mode to display an image of a keyboard in said second orientation. (Fig 2-5)

21. Display apparatus according to claim 19, said keyboard image comprising a QWERTY keyboard. 06015US

22. Display apparatus according to claim 20, said keyboard image comprising a numeric keypad.

23. Display apparatus according to claim 20, said keyboard comprising special function keys.

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24. Display apparatus according to claim 19, said symbol comprising an asymmetric cursor symbol.

25. Display apparatus comprising:
 a display;
 an orientation sensitive interface mechanism operable in first and second modes corresponding to respective first and second orientations of said display;
 selection means for selecting operation of said orientation sensitive interface mechanism in said first or second mode; and
 orientation sensing means for determining an orientation of said display and operable to automatically activate said selection means in accordance with said orientation, said orientation sensing means comprising a display mode sensor responsive to a display mode control signal indicative of a display mode for an image for display by said display apparatus to automatically activate said selection means in accordance with a sensed display mode;
 said orientation sensitive interface mechanism including first and second microphones disposed to be operative for said first and second orientations respectively, said selection means operable to select said first or second microphone for said first or second mode, respectively.

26. Display apparatus according to claim 25, said first and second microphones each comprising a stereo microphone.

27. Display apparatus according to claim 25, said first and second microphones each comprising a directional microphone, respectively.

claim
 28. Display apparatus comprising:
 a display;
 an orientation sensitive interface mechanism operable in first and second modes corresponding to respective first and second orientations of said display;
 selection means for selecting operation of said orientation sensitive interface mechanism in said first or second mode; and

orientation sensing means for determining an orientation of said display and operable to automatically activate said selection means in accordance with said orientation, said orientation sensing means comprising a display mode sensor responsive to a display mode control signal indicative of a display mode for an image for display by said display apparatus to automatically activate said selection means in accordance with a sensed display mode;

said orientation sensitive interface mechanism including a viewing angle for said display, said display apparatus further comprising viewing angle adaptation means operable in said first mode to adapt said viewing angle for said first orientation and in said second mode to adapt said viewing angle for said second orientation, said viewing angle adaptation means responsive to said selection means to be operative in said first or second mode.

29. Display apparatus according to claim 28, said viewing angle adaptation means comprising a further sensor for sensing said display apparatus disposed in substantially flat orientation relative to the surface of the earth.

30. Display apparatus comprising:
a display;

an orientation sensitive interface mechanism operable in first and second modes corresponding to respective first and second orientations of said display;

selection means for selecting operation of said orientation sensitive interface mechanism in said first or second mode; and

orientation sensing means for determining an orientation of said display and operable to automatically activate said selection means in accordance with said orientation, said orientation sensing means comprising a display mode sensor responsive to a display mode control signal indicative of a display mode for an image for display by said display apparatus to automatically activate said selection means in accordance with a sensed display mode;

said orientation sensitive interface mechanism comprising a display driver responsive to said selection means to operate in respective first and second modes to display an image on said display in respective first and second orientations.

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31. Display apparatus according to claim 30, including a digital camera, said display apparatus comprising a display driver operable to display an image derived from said digital camera on said display. *well known*

32. A portable electronic device comprising display apparatus according to claim 1.

33. A portable electronic device according to claim 32, further comprising a keyboard or keypad for inputting data or control signals to said mobile electronic device.

34. A portable electronic device according to claim 31, suitably configurable as a personal digital assistant or palm or hand held personal computing device operable to communicate with the Internet.

35. A portable electronic device according to claim 31, further comprising a transceiver and antenna for communicating with a wireless communications network.

36. A portable electronic device according to claim 35, operable as a wireless telephone and comprising a microphone operative for said wireless telephone.

37. A portable electronic device according to claim 35, wherein said wireless communication network is a cellular telephone network.

38. A portable electronic device according to claim 35, said orientation sensitive interface mechanism including said antenna, said antenna having a modifiable radiation pattern and operable in respective first and second modes to radiate an antenna pattern optimised for respective first and second orientations.

39. A portable electronic device according to claim 38, said antenna comprising an electronically steerable beam antenna.

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CLAIM 7 40. Display apparatus comprising:
a display;
a first loudspeaker pair including a first and second loudspeaker disposed along a first direction; and
a third loudspeaker, said second and third loudspeakers forming a second loudspeaker pair disposed along a second direction transverse to said first direction; and
further comprising selection means for selecting operation of said first loudspeaker pair or said second loudspeaker pair.

CLAIM 7 41. A method for operating display apparatus including an orientation sensitive interface mechanism, the method comprising: configuring said interface mechanism in a first mode to be suitable for a first orientation of said display, configuring said interface mechanism in a second mode to be suitable for a second orientation of said display, sensing an orientation of said display, displaying an image in a landscape or portrait mode in accordance with a display mode control signal, and automatically selecting said first or second modes for said interface mechanism in accordance with said display mode.

42. A method according to claim 41, wherein said sensing determines said orientation relative to the surface of the earth.

43. A method according to claim 41, further comprising selecting a landscape or portrait display mode for said display in accordance with selecting said first or second mode.

CLAIM 7 44. A method according to claim 41, for providing a stereophonic image from said display apparatus, said orientation sensitive interface mechanism including first and second loudspeaker pairs disposed transverse to each other, said loudspeaker pairs having a common loudspeaker, the method comprising selecting said first or second loudspeaker pair in accordance with an orientation of said display.

45. A method according to claim 44, further comprising adapting audio signals to provide a substantially stereophonic sound image from said first or second loudspeaker pairs.

46. A method according to claim 45, further comprising adapting respective right and left channel stereophonic signals for widening the stereophonic image produced by said first or second speaker pair.

47. A method according to claim 45, comprising introducing a phase delay between said right and left channel signals for widening the stereophonic image.

48. A method according to claim 47, comprising introducing said phase delay for one of said first or second loudspeaker pair.

CLAIM 19 49. A method for operating display apparatus including an orientation sensitive interface mechanism, the method comprising: configuring said interface mechanism in a first mode to be suitable for a first orientation of said display, configuring said interface mechanism in a second mode to be suitable for a second orientation of said display; sensing an orientation of said display, displaying an image in a landscape or portrait mode in accordance with a display mode control signal, and automatically selecting said first or second modes for said interface mechanism in accordance with said display mode, said interface mechanism including a touch sensitive display and said method comprising in a first mode displaying an asymmetric symbol in said first orientation and in said second mode displaying said symbol in said second orientation.

50. A method according to claim 49, comprising displaying an image of a keyboard on said touch sensitive display in said first mode disposed in said first orientation and in said second mode disposed in said second orientation.

51. A method for operating display apparatus including an orientation sensitive interface mechanism, the method comprising: configuring said interface mechanism in a first mode to be suitable for a first orientation of said display, configuring said interface

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mechanism in a second mode to be suitable for a second orientation of said display, sensing an orientation of said display, displaying an image in a landscape or portrait mode in accordance with a display mode control signal, and automatically selecting said first or second modes for said interface mechanism in accordance with said display mode, said interface mechanism including a first and second microphone and the method further comprising operating said first and second microphone in respective first and second modes for said first and second orientation.

52. A method according to claim 51, said first and second microphone each comprising stereo microphones.

53. A method according to claim 51, said first and second microphones each comprising directional microphones.

claim 28 54. A method for operating display apparatus including an orientation sensitive interface mechanism, the method comprising: configuring said interface mechanism in a first mode to be suitable for a first orientation of said display, configuring said interface mechanism in a second mode to be suitable for a second orientation of said display, sensing an orientation of said display, displaying an image in a landscape or portrait mode in accordance with a display mode control signal, and automatically selecting said first or second modes for said interface mechanism in accordance with said display mode, said interface mechanism including a viewing angle for said display apparatus, the method further comprising adapting said viewing angle in a first mode for viewing said display apparatus in a first orientation, and adapting said viewing angle in a second mode for viewing in a second orientation.

55. A method according to claim 54, further comprising adapting said viewing angle in said first mode for viewing said display apparatus disposed flat relative to the surface of the earth.

claim 2 56. A method for operating display apparatus including an orientation sensitive interface mechanism, the method comprising: configuring said interface mechanism in a

first mode to be suitable for a first orientation of said display, configuring said interface mechanism in a second mode to be suitable for a second orientation of said display, sensing an orientation of said display, displaying an image in a landscape or portrait mode in accordance with a display mode control signal, and automatically selecting said first or second modes for said interface mechanism in accordance with said display mode, said interface mechanism including a display, the method further comprising displaying an image in said first mode corresponding to said first orientation and in said second mode corresponding to said second orientation.

claim 55 57. A method for operating display apparatus including an orientation sensitive interface mechanism, the method comprising: configuring said interface mechanism in a first mode to be suitable for a first orientation of said display, configuring said interface mechanism in a second mode to be suitable for a second orientation of said display, sensing an orientation of said display, displaying an image in a landscape or portrait mode in accordance with a display mode control signal; and automatically selecting said first or second modes for said interface mechanism in accordance with said display mode, said interface mechanism including a wireless transceiver and antenna for communication with a wireless communications network, the method further comprising adapting said antenna to radiate in a first radiation pattern mode for optimal radiation for said first orientation, and adapting said antenna to radiate in a second radiation pattern mode for optimal radiation in said second orientation.

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